KELVIN 64

ORCHID

Kelvin 64

User's Manual

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Orchid Technology has been a leading manufacturer of hardware and peripherals for personal computers since its incorporation in 1982, and is noted for introducing new standards to the personal computer industry:

1982 **PCnet**: first personal computer Local Area Network.

1984 **PCturbo**: first Accelerator card for PC compatible computers.

1985 **ECCELL**: first PC Multifunction card with error correction.

1987 **RamQuest 50/60**: first EMS (Expanded Memory Specification) product for the IBM PS/2 computers.

1990 **ProDesigner II**: first Beyond Super VGA graphics adapter to support 1024 x 768 graphics in 256 colors on interlaced and non-interlaced monitors.

1991 **Fahrenheit 1280°**: first to ship a Windows accelerator based on S3's 86C911 chip.

1992 **Fahrenheit VA**: first to ship a Windows accelerator with video audio built-in.

1993 **Celsius/VLB**: first to ship a Windows accelerator based on IIT's award-winning AGX015 chip.

Introduction

The Kelvin 64™ is a powerful 64-bit graphics accelerator that provides high-speed horizontal and vertical acceleration in all graphic modes. It uses a full 64-bit non-interleaved DRAM interface which is *twice the throughput of 32-bit controllers*. The result is top graphic responsiveness.

Kelvin 64 introduces Green PC Power Management andVESA Display Power Management Signaling (DPMS). The Kelvin 64 is the first affordable 64-bit graphics accelerator for ISA, VL-Bus, PCI and Pentium systems.

Operating at resolutions up to 1280x1024, the Kelvin 64's powerful 64-bit architecture accelerates *all* your modes, provides true high resolution graphics and full VESA compliance. In addition, Kelvin 64 also comes with a comprehensive range of software enhancements and utility programs that includes the Big Picture feature, and a user-friendly screen utility that adjusts the refresh rate and centers the screen *without* using conventional memory.

Thank you for purchasing Kelvin 64. Care has been taken to ensure that it will provide you with years of trouble-free operation. We believe you will be pleased with your purchase.

About This Manual

This manual presumes that you are already familiar with your IBM PC compatible computer. While Kelvin 64 has been designed to be easy to install, we recommend that you refer to your computer's reference manual when terminology or installation steps are unfamiliar to you.

This manual has been organized to help you set up and install Kelvin 64 as quickly as possible. Each section is divided into short, easy-to-follow steps, to help you understand the installation and function of Kelvin 64.

Section 1: Installing Kelvin 64

Whether you are a beginner or an experienced user, this section will give you important information on the proper installation of Kelvin 64.

Section 2: Device Drivers and Utilities

Here you will be given the information needed to install high resolution device drivers for AutoCAD, Windows 3.1, Lotus 1-2-3, WordPerfect and Word. Kelvin 64 also provides a screen utility that adjusts the refresh rate and centers the screen.

Appendix A: Technical Help and Information

If you are experiencing installation difficulties or require troubleshooting information, this section will give you checkpoints to look at to ensure that your Kelvin 64 is operating properly. Appendix A also includes information on the technical specifications and features.

Appendix B: Green PC

Appendix B provides details on the Green PC feature.

Important! - Before You Begin

This manual contains information for all of the products listed below. All references to "Kelvin 64" will refer to all of these products, unless otherwise noted.

Kelvin 64/VLB

The Kelvin 64/VLB is VL-Bus 2.0 compliant, which provides a 32-bit direct connect interface. It supports 50MHz operations, uses VESA Local Bus (VL-Bus) technology for incredibly fast graphics, and is VL-Bus 1.0 backward compatible.

Kelvin 64/PCI

The Kelvin 64/PCI provides burst mode technology, which is required for the fastest graphics possible in Windows, OS/2, UNIX and other GUI environments. Its technology provides compatibility with Pentium-based systems, and because of compatibility with 64-bit data access, you will experience data throughput at impressively high levels.

Kelvin 64/ISA

The Kelvin 64/ISA is the next generation Super VGA graphics adapter. Its 64-bit graphics accelerator technology provides for *faster* Windows and video performance. It supports resolutions up to 1280x1024 and colors up to 16.8 million.

This manual will familiarize you with the features, installation and use of your Kelvin 64. There are several symbols and conventions used throughout this manual which will help to draw your attention to a feature or to focus on important information:

When you see the Magnifying Glass, it means the text is referring to something you *should* take a closer look at before proceeding further.

`FILENAMES` All MS/PC DOS filenames and DOS commands will be emphasized by this type style.

Common Names

DPMS	Display Power Management Signaling
ISA	Industry Standard Architecture
PC	Refers to the family of IBM PC, PC/XT or PC/AT compatible computers
PCI	Peripheral Component Interconnect
SVGA	Super VGA
VESA	Video Electronics Standards Association
VGA	Video Graphics Array
VL-Bus	VESA Local Bus

Section

1

INSTALLING KELVIN 64

The Kelvin 64 graphic cards are designed to be easy-to-use and easy-to-install. There are three fundamental steps to the installation:

Step 1: Preparing your Computer

You will need to take the cover off your computer and prepare an expansion slot for your Kelvin 64.

STATIC!

Before handling the Kelvin 64, be sure to guard against electrostatic discharge. Do not wear clothing that causes static (such as wool sweaters). In most cases, touching the power supply housing before handling the card will discharge static electricity, or you may want to buy a Ground strap from your local computer store.

Step 2: Preparing your Kelvin 64

There are no switches or jumpers to set for Kelvin 64. If you want to add memory to Kelvin 64 at this time or later, this step gives you details on the memory required.

Step 3: Installing your Kelvin 64

Once the Kelvin 64 has been securely seated in the computer and the cover replaced, the Kelvin 64 will be ready to operate.

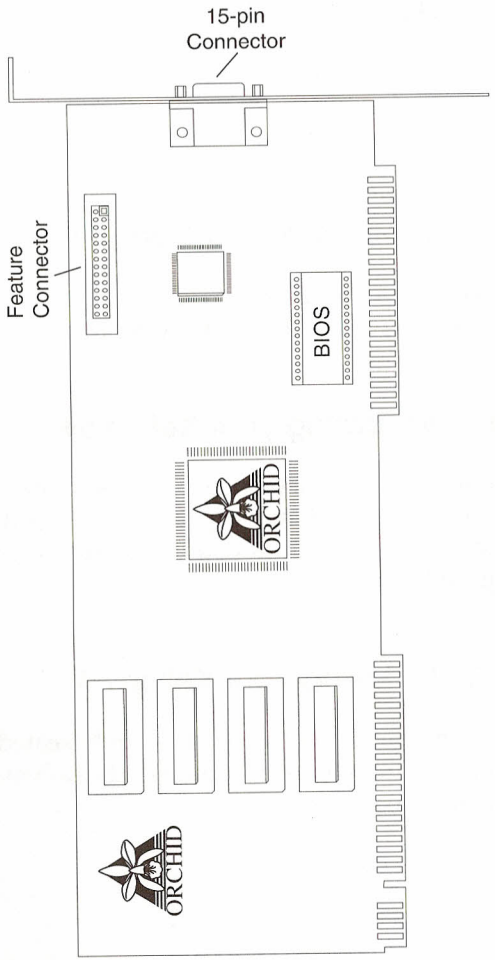


Figure 1.1: Kelvin 64/VLB Diagram

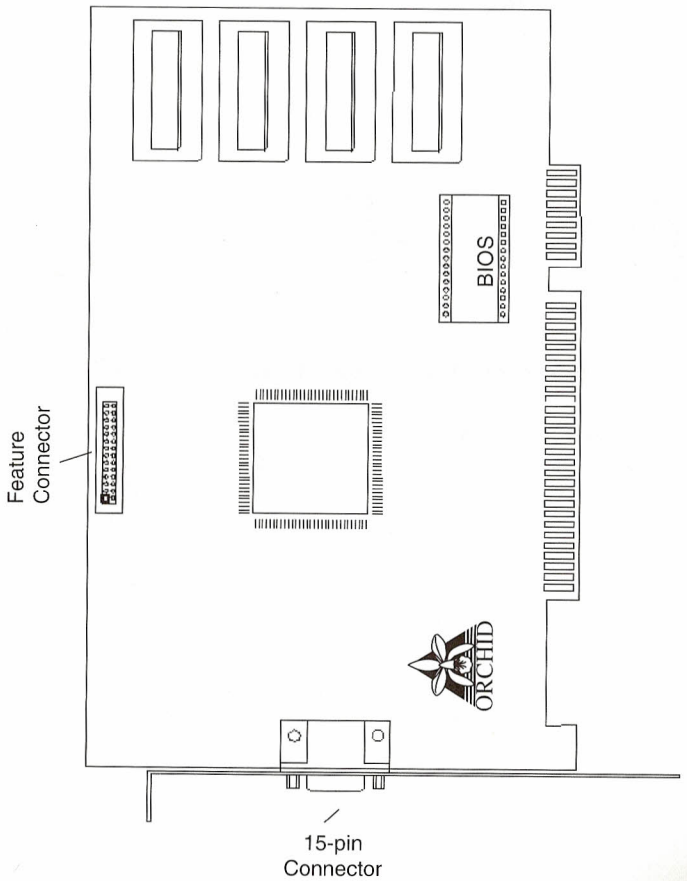


Figure 1.2: Kelvin 64/PCI Diagram

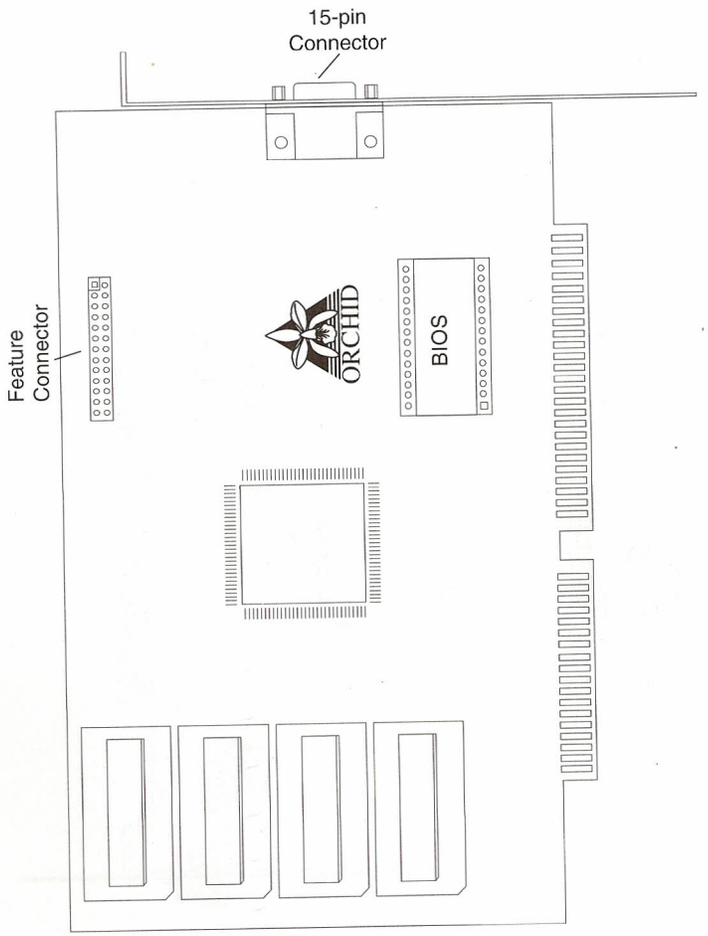


Figure 1.3: Kelvin 64/ISA Diagram

Step 1: Preparing Your Computer

1. Turn off the power to your computer and disconnect all of the power cords and cables from the computer.
2. Remove the screws that secure the computer chassis cover. Slide the cover off and keep the screws in a safe place.
3. Make sure your system is configured for color display. Consult your computer user's manual for more information.

Step 2: Preparing your Kelvin 64

There are no switches or jumpers to set for Kelvin 64. If you are not adding memory at this time, skip to Step 3.

Adding Memory

Kelvin 64 comes configured with 1MB of DRAM (Dynamic Random Access Memory) and is easily upgraded to 2MB. The additional memory is automatically detected by Kelvin 64, and must meet the following specifications:

- 256K x 16 DRAM
- Operate at 70 nanoseconds access time or faster. The access time is indicated on the chip as follows:

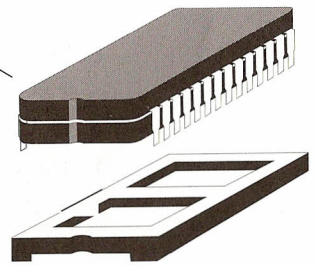
  -7 = 70 nanoseconds access time

Installing the memory chips:

To add 1MB of memory to your Kelvin 64, you will need to install two 256K x 16 DRAM chips into BANK 1. See the following steps for proper installation:

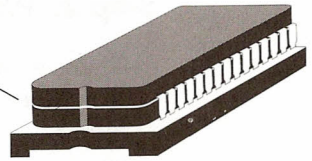
NOTE: Avoid electrostatic discharge when handling the memory chips. Be properly grounded by touching the power supply housing or by using a Ground Strap.

1. To install a memory chip, position it over the empty socket. Make sure that the writing on the chip is facing the same direction as the memory chips already installed.



2. Place the memory chip down into the socket.

3. Use your thumbs to evenly press each side of the memory chip down into the socket. You will hear a small "snap" as the chip is fully installed.



The memory installation is now complete.

Step 3 : Installing Your Kelvin 64

Once you have prepared your Kelvin 64, you are ready to install Kelvin 64 and connect your monitor.

1. Select an expansion slot for Kelvin 64. *Depending on what card you have, select a 32-bit VL-Bus slot for the Kelvin 64/VLB, or a 32-bit PCI slot for the Kelvin 64/PCI, or a 16-bit ISA slot for the Kelvin 64/ISA.*

2. Remove the rear slot cover bracket if it is present and keep the screw for future use.

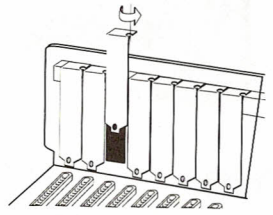


Figure 1.4: Rear slot cover

3. Carefully hold Kelvin 64 by the top edges and lower it into its expansion slot. Ensure that Kelvin 64 seats firmly into the slot, and that it aligns properly with the computer's backplane.

4. Secure Kelvin 64 in place by fastening its metal bracket to the computer backplane (use the screw you removed).

5. Reconnect previously removed cables and power cords and replace the cover of the computer.

6. Connect your monitor cable to the 15-pin monitor connector on Kelvin 64 (see Figure 1.5).

Kelvin 64 installation is complete.

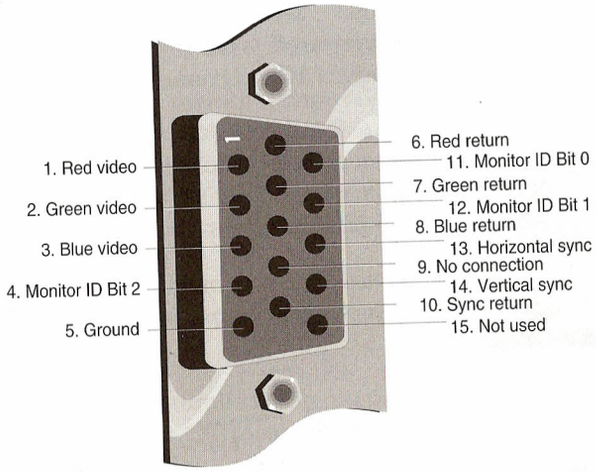


Figure 1.5: Standard 15 pin D-shell Connector

Section

2

DEVICE DRIVERS

To utilize the advanced features of the Orchid Kelvin 64, high resolution drivers for popular software applications are provided. Follow the instructions for KINSTALL.EXE for automatic software installation.

The Kelvin 64 provides register-level VGA mode compatibility. Software programs can be operated in this mode using drivers supplied by the software manufacturer. The high resolution drivers included are:

Some software programs may already include software drivers for Kelvin 64. Check with the manufacturer for verification.

Windows 3.1
Lotus 1-2-3
Word
WordPerfect
AutoCAD

New drivers will be made available through the Orchid Technical Support Department, or may be downloaded from the Orchid Bulletin Board System.

Before You Begin

Before installing any of the Kelvin 64 high resolution drivers, verify the capabilities of your monitor. If you install drivers for a resolution that your monitor is not capable of producing, the results will probably be unsatisfactory.

The following instructions assume you are using a floppy drive designated as Drive A:, and a hard drive designated as drive C:. Please substitute the correct drive letter if your computer is configured differently.

Using KINSTALL.EXE

You must have an application installed on your computer before you can install the Kelvin 64 software drivers for that application. KINSTALL.EXE is an easy-to-use, menu driven installation program that allows you to automatically install the Kelvin 64 software drivers and utilities.

Insert the Kelvin 64 disk into your A: drive and invoke the KINSTALL.EXE installation program by typing:

```
A:\KINSTALL  Enter ↵
```

From the Display Driver Installation Program menu, press any key, and the following menu appears:

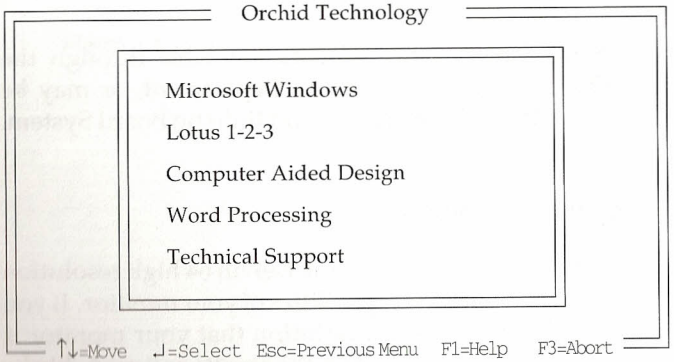


Figure 2.1: KINSTALL Main Menu Screen

From the Main Menu, highlight the driver to be installed by using the <↑ ↓> arrow keys and press <ENTER> to select. Proceed through the installation as prompted by the program. Repeat this process for all drivers you wish to use with the Kelvin 64.

For assistance during the installation process, KINSTALL.EXE provides on-line help by selecting the F1 key at any time.

Network Considerations

The KINSTALL installation program offers standard and network installation options for Windows drivers. If you are using Windows on the Novell (or compatible) network, install the Kelvin 64 Windows drivers to the Shared Windows directory on the network server. Select the Network Server Installation option.

The Orchid icon will only appear on workstations that have a Kelvin 64 installed.

Once the drivers are installed on the network server, the Orchid icon appears in the Windows Control Panel on the workstation(s), for individual driver customization on each workstation.

Microsoft Windows Driver Installation

Once you select the Microsoft Windows installation, the KINSTALL program automatically copies the Windows 3.1 driver and the Kelvin 64 Setup utility to your hard drive. Follow the instructions below:

To configure the Windows driver:

1. Start the Microsoft Windows application.
2. Double-click on the Control Panel icon (usually located in the Main group on the Windows desktop). From the Control Panel window, double-click on the Kelvin 64 Setup icon. The following menu appears:

To see information about the configuration of your Kelvin 64, click on the control menu box in the upper-left corner of the dialog box, then select the About option.

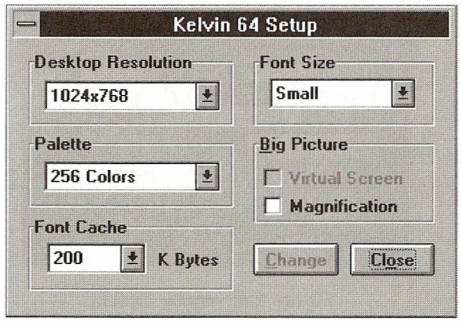


Figure 2.2: Kelvin 64 Setup Menu

This easy-to-use setup menu allows you to configure your Windows video driver by choosing the resolution, colors, font cache and text font size. The menu also includes the Big Picture feature, which provides Virtual Screen and Magnification options for your display.

If the Font Cache selection is grayed out, the mode selected does not support font caching.

3. Make your desired selections and click on the Change button to restart Windows. You are now ready to use the graphics capabilities of Kelvin 64.

Use this utility now and for any future changes to the Kelvin 64 video display.

For details on using the other KINSTALL menu options, press the F1 key at any time for on-line help.

Menu Features

Inquiry Option

You can request information about the menu options on the Kelvin 64 Setup menu. Each option has a drop-down list box to show available choices.

For example, to request information about the Desktop Resolution, follow the steps below:

1. Using your right mouse button, click on the arrow at the right of the box. A drop-down list appears.

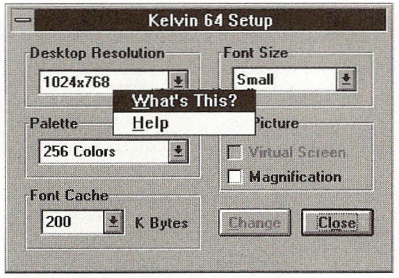


Figure 2.3: Inquiry Option

2. Click on the What's This? choice. A definition of your menu selection is displayed.

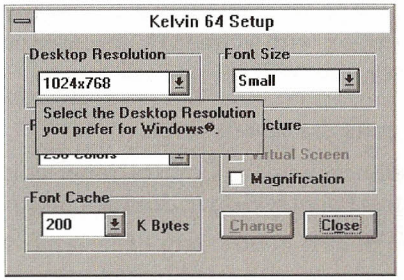


Figure 2.4: Inquiry Option Defined

Center Window Option

This option centers the Kelvin 64 Setup menu. Selecting Center Window places the menu screen in the center of the screen every time it is accessed. To use this option, follow the steps below:

1. Click on the Control-menu box in the upper-left corner of the dialog box (see Figure 2.2). The following menu appears:

Figure 2.5: Center Window Option

2. Click on the Center Window box, then click on Change to restart windows.

Screen Saver Option

For more information on the Green PC feature, see Appendix B.

Use this option for power savings on your Green PC monitor while your monitor is inactive. When you use this option with a Green PC monitor or other type of monitor, you will see a blank screen.

To configure the screen saver:

1. Double-click on the Control Panel icon. From the Control Panel window, double-click on the Desktop icon.
2. From the Screen Saver box, click on the arrow at the right of the box. A drop-down list appears. Click on the Kelvin 64 Green PC selection.
3. Click on the Test button to test the screen saver. Click on Cancel to stop the test.
4. Click on the Setup button and the following screen appears:

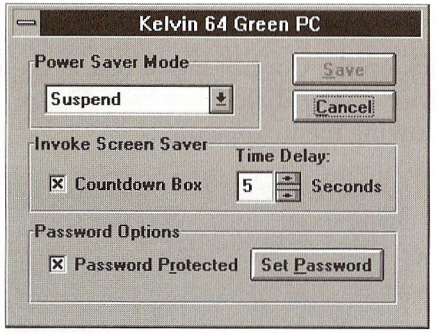


Figure 2.6: Screen Saver Option

5. Configure the screen saver and select a power saver mode for your Green PC monitor.

Big Picture Feature

The Big Picture feature of the Kelvin 64 Setup utility offers two options: Virtual Screen and Magnification.

Virtual Screen

You can use the Virtual Screen option to create a larger desktop workspace (see Figure 2.2). With Virtual Screen, your mouse movement automatically pans the desktop to give you access to any part of your document or window without resizing or using scroll bars.

It is an ideal solution for spreadsheet or desktop applications. A large area of display can be panned and viewed by simply moving your mouse. Virtual Screen doubles your workspace by transforming your standard VGA monitor into a virtual display with pixel resolution up to 1024x768.

To configure Virtual Screen:

1. From the Control Panel window, double-click on the Kelvin 64 Setup icon. The menu in Figure 2.2 appears.
2. From the Big Picture box, click on Virtual Screen.
3. Click on your choice of resolution, colors, font cache and text font size. Click on Change to reset Windows so your changes will take effect.

Magnification

The Magnification option allows you to enlarge a portion of your document to its maximum size. This is ideal when you need a closer view of your drawing. The Magnification Key Configuration selection allows you to configure a Hot-Key sequence to activate the following options:

In = Zoom In. Use the In command to magnify a portion of your document. *(Default is <ALT> + <1>)*

Out = Zoom Out. Use the Out command to see all of your document at one time. *(Default is <ALT> + <2>)*

Freeze = No panning. Use the Freeze command to turn off panning, which prevents the Window from moving even if you move your mouse. You can unfreeze the Window by using the Hot Key combination. *(Default is <ALT> + <3>)*

To configure Magnification:

1. Start the Microsoft Windows application.
2. From the Control Panel window, double-click on the Kelvin 64 Setup icon.
3. From the Big Picture box, click on Magnification.
4. Click on the Magnification Key Configuration option. An additional set of options appear in the Kelvin 64 Setup menu.

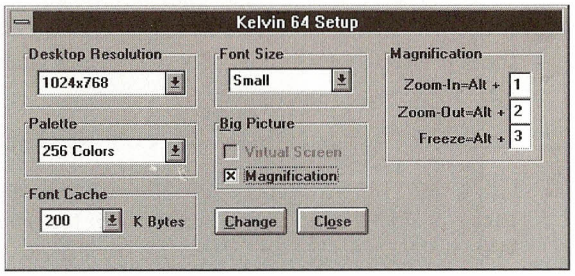


Figure 2.7: Magnification Option

5. Select a key to use to activate each of the Magnification features (a Hot-Key). Press <ALT> plus a key of your choice. Click on Change to reset Windows so your changes will take effect. When Windows restarts, the Magnification icon appears on the desktop.

UTILITY SOFTWARE

Using KSCAN

With a few simple keystrokes, the KSCAN utility program allows you to define your monitor type and select a video mode for your monitor. KSCAN is installed using the KINSTALL program. Because it is a DOS-based utility, do not run KSCAN from inside other programs, such as Windows.

Using KSCAN, you can also center the screen on your monitor while in Video Modes Preview. To run KSCAN from the DOS prompt, type:

C:\CD KELVIN Enter ↵

then

C:\KSCAN Enter ↵

If you do not have a mouse driver loaded in DOS, or if you prefer using the keyboard, use the TAB key to move around the menus.

The following menu appears:

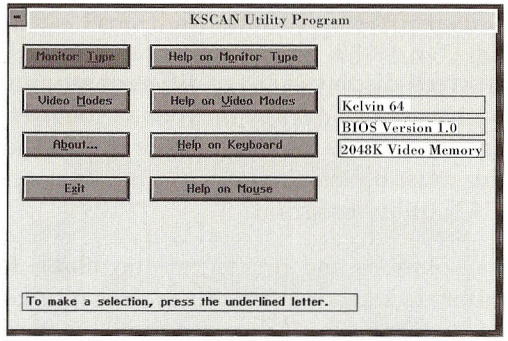


Figure 2.8: KSCAN Main Menu

This menu displays the BIOS version of your Kelvin 64 and the amount of video memory installed. From this menu, you can configure your monitor type and preview all the video modes supported by your monitor. The video modes available to you depend on your monitor type and the amount of memory installed on your Kelvin 64.

Selecting the Monitor Type

Selecting the proper monitor type allows Kelvin 64 to display the highest quality output supported with your monitor. From the main menu select Monitor Type, and the following menu appears:

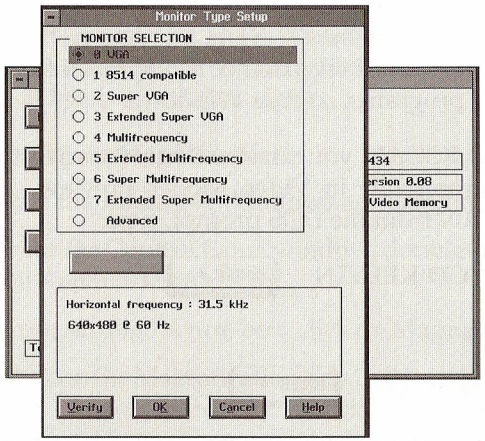


Figure 2.9: Monitor Type Setup

This screen displays a list of different monitor types. Use a mouse or TAB key on your keyboard to select your monitor type. *NOTE:* To use a mouse, the mouse driver must be installed in DOS before running the KSCAN utility program.

If you are not sure what type of monitor you have, consult your monitor's reference guide.

The resolutions and refresh rates available for your monitor are listed in the box below the monitor selections. Selecting the Advanced monitor selection allows you to customize the monitor timings for your monitor, more on this option in the Advanced Monitor Setup Section.

After making your selection, select the Verify button to check that the setting selected is compatible with your monitor. The Verify option will test each video mode available for your monitor type. Each test screen is displayed with a set of color blocks and sample text. The mode number and mode being tested is displayed at the bottom of the screen. Press <ENTER> to move through each mode available. You can abort the test at any time by pressing the <ESC> key.

If any of the screens appear distorted, rolling, or unreadable, or if the program hangs up, it is likely that the monitor type you selected is incorrect. Consult your monitor's reference guide before making another selection. After you have verified your selection, select the OK button to save your setting, or press the Cancel button to discard the change. Once you select the OK button, your selection is saved in the AUTOEXEC.BAT file.

Advanced Monitor Setup

You can customize the monitor timings for your monitor to achieve the highest vertical refresh rates available. From the Monitor Type Setup menu, select Advanced. Once you select Advanced, the gray button will show Set Advanced. Select Set Advanced and the following menu appears:

Setting the incorrect values may damage your monitor. Consult your monitor's reference guide for the vertical refresh rates available.

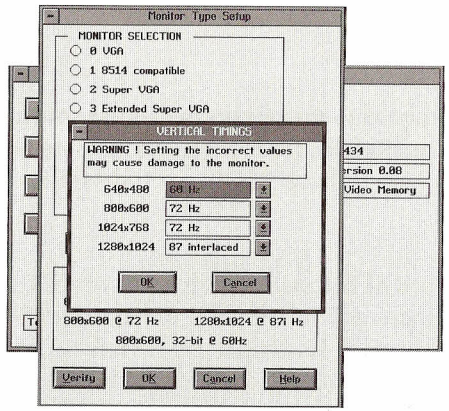


Figure 2.10: Advanced Monitor Type Setup

Selecting the Set Advanced button displays a dialog box with drop-down menus for each available resolution. Select the desired vertical refresh rate for each resolution. After making your selections, press the Verify button to check that the setting selected is compatible with your monitor. The Verify option will test each video mode available for your monitor type.

Video Modes

The Video Modes option displays all video modes supported, based on your monitor type and amount of video memory installed on Kelvin 64. From the main menu, select Video Modes. From the Video Modes screen, select Preview.

To see what a mode will look like on your monitor, highlight the mode, then select Preview. There are several test screens for each mode selected. Press <ENTER> to move through each test screen. You can abort the test at any time by pressing the <ESC> key.

Appendix

A

TECHNICAL HELP

Orchid Technology is known for its responsiveness to its customers. This section gives you helpful hints for troubleshooting Kelvin 64.

Troubleshooting the Kelvin 64

The following information will help you diagnose problems you may have with the Kelvin 64.

Following these simple steps serves a two-fold purpose:

> You may be able to fix your problem and avoid having to contact the Orchid Technology Technical Support Department,
>
> or
>
> if these steps do not help you solve your problem, the results will most certainly give you a better handle on what to tell Technical Support once you do contact them.

The information provided here is in symptom/response form. That is, a symptom is given, and a check point response is provided for you.

Symptom 1

The computer does not power-up or respond when powered on. The screen is completely blank. There is no familiar boot up (POST test) beep.

Check

1. Is the Kelvin 64 properly installed in the slot? Is the edge connector inserted all the way into the expansion slot? Is the Kelvin 64 properly aligned with the motherboard's backplane?
2. Is there another display adapter in your system? If it is an on-board video display adapter, make sure

it is disabled. If the video display adapter is other than a standard MDA video adapter, remove it from the system.

3. Is the computer set up correctly for the Kelvin 64? Refer to your computer's reference manual for information on setting up your computer.
4. Are your computer and monitor plugged in? Check the power cables to your computer and monitor.

Symptom 2

The computer gives an error of 1 long beep and 2 short beeps at power up.

Check

1. Take a look at the check points for symptom 1, steps 1 through 4.

Symptom 3

The computer seems to boot up properly but there is no display.

Check

1. Is your monitor plugged in? Check the power cable to your monitor.
2. Is your monitor cable fastened securely and properly? Check both the connection at the monitor and at the Kelvin 64 card.
3. Is your monitor cable the correct kind for the Kelvin 64? Check Section 1 for the proper pin- out information to determine if your cable is correct.
4. Is there another display adapter in your system? If it is an on-board video display adapter, make sure it is disabled. If the video display adapter is other than a standard MDA video adapter, remove it from the system.

Symptom 4

The display loses synchronization once it gets into a graphics program.

Check

1. Is the vertical hold on your monitor properly set? Is your software properly installed for your current application? Check Section 2 for Device Driver information.
3. Is your monitor able to display the graphics mode you are using? Double check your monitor specifications to determine if you are operating in a graphics mode that your monitor simply cannot handle.
4. Are you using the correct vertical refresh rate for your monitor? Double check your monitor specifications for the refresh rates supported.

Symptom 5

The Kelvin 64 works well in another brand computer, but not at all in mine.

Check

1. Take a look at the check points for symptom 1, steps 1 through 4. It is a pretty good guess that the problem is not the Kelvin 64 if it is working properly in another system.

Symptom 6

The Orchid icon does not appear in the Windows Control Panel.

Check

1. Check to make sure that you installed the Kelvin 64 Windows drivers into the correct directory.
2. Memory managers can prevent icons from appearing. See Appendix A for details about using memory managers.

TECHNICAL INFORMATION

This section covers the specifications and features of the Kelvin 64, including information on upgrading the memory.

Kelvin 64 Technical Specifications

Configuration
Kelvin 64 - 1024 KB
2048 KB

Video Chipset:
Cirrus Logic 5434

Upgrade RAM Chips:
256KB x 16, 70 nanoseconds or faster DRAM

Computers Supported:
486 and compatibles (with VL-Bus connector)
Pentium-based systems

Interface Speed
Up to 50MHz

BIOS:
8-bit

Bus Connector:
32-bit - Kelvin 64/VLB
32-bit - Kelvin 64/PCI
16-bit - Kelvin 64/ISA

Card Size:
9.34" x 3.34"
7" x 3.75"
7.25" x 3.75"

Output Connectors:
15-pin D-Shell VGA
Feature Connector (VESA bi-directional)

Additional Features:

Supports
75Hz Vertical Scan Refresh Rate

1024 x 768 x 256 colors - Interlaced and Non-Interlaced

640 x 480 x 16.8 million colors

800 x 600 x 16.8 million colors (with 2MB DRAM)

1280 x 1024 x 256 colors - Non-Interlaced (with 2MB DRAM)

Memory Address Segments:
RAM: A000-BFFF

ROM: C000-C7FF

I/O Address: 3B0-3DF (IBM standard)

Temperature:
Operating: from 0 to 40 degrees C
Storage: from -25 to 90 degrees C

Humidity:
Operating: from 15% to 90%
Storage: from 0% to 90%

Memory Address Setting

Kelvin 64 uses the A000-C7FF memory address segment. Some memory manager programs may try to use this address segment. If you encounter a conflict, add an exclusion statement in your CONFIG.SYS file, to exclude the Kelvin 64 address segment from being used. Refer to your software program user's manual for details on using an exclusion statement.

VESA Support

All Kelvin 64 models support the VESA BIOS Extension (VBE) regardless of their bus interface type.

Kelvin 64 is designed to support the VESA BIOS Extension (VBE) through its BIOS. The VESA BIOS Extension standard is a separate standard from VESA Local BUS (VLB). Extended modes can be selected through the VESA option in the application you are running. The BIOS supports the VESA 1.2 specification.

Kelvin 64/VLB is designed to support the VESA Local Bus (VL-Bus) standard. The local bus design provides 32-bit data transfer between the video card and the CPU for incredibly fast graphics, and is VL-Bus 1.0 backward compatible.

How to obtain the Memory Upgrade Kit

If you have 1MB of memory on your Kelvin 64 and would like to upgrade to 2MB of memory, call our Customer Service staff to purchase a memory upgrade kit. Orchid Technology's telephone number is on the Technical Help and Warranty Card enclosed with your Kelvin 64.

Please be sure your monitor supports your selected mode and frequency (refer to your monitor's reference guide).

Kelvin 64 Resolutions and Refresh Rates

Resolution	Maximum Memory	Colors	Vertical Refresh
1280x1024	1MB	16	43.5,60
1024x768	1MB	16	43.5,60,70,72,75
	1MB	256	43.5,60,70,72,75
800x600	1MB	16	60,72,75
	1MB	256	60,72,75
	1MB	65,536	60,72,75
640x480	1MB	16	60,75
	1MB	256	60,75
	1MB	65,536	60,75
1280x1024	2MB	256	43.5,60
1024x768	2MB	65,536	43.5,60,70,72,75
800x600	2MB	16.8 million	56,60
640x480	2MB	16.8 million	60,75

Table A.1: Resolutions and refresh rates

Feature Connector Pin Outs (VESA Standard)

The VESA standard Feature Connector (or Auxiliary Video Connector as it is sometimes called) is located at the top of the Kelvin 64 (see Figures 1.1, 1.2 or 1.3).

The feature connector permits third party add-on accessories to both share signals and share control of the VGA circuitry. The following table lists the feature connector's pin-out information:

Kelvin 64 Feature Connector Pin-Outs							
Pin	Function	Pin	Function	Pin	Function	Pin	Function
Y1	Pixel Data 0	Y8	Pixel Data 7	Z2	Ground	Z9	Ground
Y2	Pixel Data 1	Y9	Pixel Clock	Z3	Ground	Z10	Ground
Y3	Pixel Data 2	Y10	Blanking	Z4	(See Note 1)	Z11	Ground
Y4	Pixel Data 3	Y11	Hor. Sync	Z5	(See Note 2)	Z12	No Connect
Y5	Pixel Data 4	Y12	Vert. Sync	Z6	(See Note 3)	Z13	No Pin (Key)
Y6	Pixel Data 5	Y13	Ground	Z7	No Connect		
Y7	Pixel Data 6	Z1	Ground	Z8	Ground		

Table A.2: VESA Feature Connector Pin-Outs

NOTES:

(1) Low Enable External Pixel Data Input to the motherboard DAC.

(2) Low Enable External Sync and Blanking Inputs to the motherboard DAC.

(3) Low Enable External Pixel Clock Input to the motherboard DAC.

Appendix

B

GREEN PC

Orchid stays on the cutting edge of technology while maintaining compatibility. With the Kelvin 64, we took a power saving approach by incorporating the Green PC technology. The following information details the Green PC technology.

Green PC Feature

The Green PC feature allows a computer system to be energy efficient. The most common method to save energy was developed by VESA and called the Display Power Management Specification (DPMS). On computer desktop systems, monitors usually consume over 50% of the overall power used. Most monitors consume between 130-200 watts, even when idling.

Using a Green PC monitor and a Kelvin 64 in conjunction, you can lower the power consumption to 30 watts when the monitor is idle. This power management feature is required by the EPA's Energy Star Program and is also required by all U.S. government agencies.

A Green PC monitor and your Kelvin 64 can be placed into one of four states: On, Standby, Suspend or Off. Here is an overview of the DPMS signaling method:

Monitor State	Power Savings	Recovery Time
On	None	N/A
Standby	Minimal	Short
Suspend	Substantial	Longer
Off	Maximum	System-dependent

The power management technology of this feature implement the VESA Display Power Management

(DPMS) proposal, the U. S. Government Environmental Protection Agency "Energy Star" and the European "Nutek" standards. The Green PC Power Management feature makes Kelvin 64 a complete cost-effective solution for the energy conscious.

FCC NOTICE

FCC# DDS7EF1093-93-KVL *

Kelvin 64/VLB
Certified compliant with FCC Class B limits, part 15

To meet FCC requirements, shielded cables are required to connect the unit to a Class B certified device

"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

This equipment generates and uses radio frequency energy and, if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio or television reception.

This device has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. Only equipment (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this product.

If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient the receiving antenna.
2. Relocate the computer with respect to the receiver.
3. Move the computer away from the receiver.
4. Plug the computer into an outlet which resides on a different circuit breaker than the receiver.
5. If necessary, consult your dealer, or an experienced radio or television technician for additional suggestions.

You may find the booklet **How To Identify and Resolve Radio-TV Interference Problems** helpful. It was prepared by the Federal Communications Commission and is available from the U.S. Government Printing Office, Washington, DC 20402. Refer to stock number: 004-000-00345-4.

Orchid Technology is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interference.

Operation with non-certified equipment is likely to result in interference to radio and TV reception. The user must use shielded interface cables in order to maintain the product within FCC compliance.

** For Kelvin 64/VLB only. For Kelvin 64/PCI the FCC number is DDS7EF1193-93-PCI. For Kelvin 64/ISA the FCC number is DDS7EF0294-94-ISA.*

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